Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.-38. (cancel)

39. (new) A laser-based method of high resolution marking of printed circuit boards (PCBs), chip scale packages (CSPs), microball grid arrays (u-BGAs) or similar articles, or marking pre-determined locations related to the articles, the articles being disposed on a surface, mounted on a substrate, constrained within pockets of a compartmentalized tray, secured to a pallet, or otherwise supported by a surface at a laser marking station, the marking to occur with a focused laser marking beam at a laser marking beam location within a marking field, the method comprising:

receiving articles at the marking station;

imaging one of the articles, the imaged article having a feature suitable for detection with an optical sensor to obtain an image;

locating the feature of the imaged article in the image to obtain a feature location;

calculating an offset to relate the feature location to a marking location;

generating a displacement control signal based on the offset;

setting a laser marking beam location based on the displacement control signal so that the marking beam location substantially coincides with the marking location within a marking field, the marking field being substantially smaller than a field that covers all the articles supported at the marking station; and

generating, directing, and focusing a laser beam to produce a focused laser marking beam so that the marking beam forms at least one mark at the marking location within the marking field wherein the step of imaging is carried out with an optical sensor located disjoint from an optical axis of the laser marking beam.

40. (new) The method of claim 39, further comprising accepting input data representing marking locations and marking content.

41. (new) The method of claim 39, wherein the marking location is within a region proximal to circuitry of the article, and marking is carried out without a substantial risk of damage to the circuitry.

42. (new) The method of claim 41, wherein the region is a portion of a substrate, package, or semiconductor die.

43. (new) The method of claim 39, wherein the step of calculating includes estimating at least one of a translation and a rotation.

44. (new) The method of claim 39, wherein resolution of the marking is within a range of about 1:3000 to 1:6000 of the marking field.

45. (new) The method of claim 39, wherein the articles are printed circuit boards (PCBs), each printed circuit board being a portion of a multi-up.

46. (new) The method of claim 39, wherein the articles are chip scale package (CSPs), or microball grid arrays (u-BGAs).

47. (new) The method of claim 39, wherein at least one of the steps of directing and focusing includes producing a marking pattern with a plurality of focused spots, each spot having at size of about 25-50 microns.

48. (new) The method of claim 39, wherein the field that covers all the supported articles has a dimension from about 200 mm to about 500 mm.

49. (new) The method of claim 39, wherein the marking field has a dimension of about 100 mm.

50. (new) The method of claim 39, wherein the feature is a circuit trace or interconnect.

51. (new) The method of claim 50, wherein the interconnect is a grid array element.

52. (new) The method of claim 39, further comprising providing a laser marking head at the marking station and automatically adjusting height of the laser marking head relative to the article.

53. (new) The method of claim 40, wherein the step of directing comprises controllably steering the focused laser marking beams along two substantially orthogonal intersecting axes at the marking station based on the input data.

54. (new) The method of claim 53, wherein the step of setting comprises displacing two substantially orthogonal axes in first and second directions, the second direction being substantially orthogonal to the first direction at the marking station.

55. (new) The method of claim 54, wherein the step of controllably steering is carried out using first and second galvanometer-based scanners for the first and second directions, respectively.

56. (new) A laser marking system for high resolution marking of printed circuit boards (PCBs), chip scale packages (CSPs), microball grid arrays (u-BGAs) or similar articles, or marking pre-determined locations related to articles, the articles being disposed on a surface, mounted on a substrate, constrained within pockets of a compartmentalized tray, secured to a pallet, or otherwise supported by a surface at a laser marking station, the marking

to occur with a focused laser marking beam at a laser marking beam location within a marking field, the system comprising:

an optical sensor to obtain image data from an article to be marked and locate a feature of the article using the image data to obtain a feature location;

a calculator to calculate an offset between a location to be marked on the article and the marking beam based on the feature location; and

a laser marker for producing a focused laser marking beam, the laser marker including a beam positioner and a laser marking head positioned at a location disjoint from the optical sensor, the beam positioner setting position of the marking beam based on the offset to obtain an adjusted marking beam, the laser marking head marking the article with the adjusted marking beam at a specified location within a marking field, the marking field being substantially smaller than a field that covers all the articles supported at the marking station.

57. (new) The system of claim 56, further comprising a machine vision subsystem wherein the optical sensor is a part of the machine vision subsystem.

58. (new) The system as claimed in claim 57, wherein the machine vision subsystem includes a lighting assembly for illuminating the articles at the marking station.

59. (new) The system as claimed in claim 58, wherein the lighting assembly includes a pulsed illumination subsystem.

60. (new) The system of claim 56, wherein the calculator calculates at least one of a translation and a rotation.

61. (new) The system of claim 56, wherein the articles are IC packages, chip scale packages, or die and wherein specified locations for marking are in close proximity to circuit elements.

62. (new) The system of claim 56, wherein the feature is a circuit trace or interconnect.

63. (new) The system of claim 62, wherein the interconnect is a grid array element.

64. (new) The system of claim 56, wherein the feature is a fiducial or ID mark.

65. (new) The system of claim 56, wherein the marking beam includes a plurality of focused spots, and wherein the articles are marked in specified regions with the plurality of focused spots, each of the spots having a size of about 25-50 microns.

66. (new) The system of claim 56, further comprising a mechanism for adjusting height of the laser marking head relative to the article to be marked

67. The system of claim 56, wherein the marking field is about 100 mm square.